## INTERVIEW SUMMARY

Applicants would like to thank Examiner Yang for the courtesies shown them in the personal interview held on October 23, 2007. In attendance for the Applicants were Dr. Luis Serra, and Aaron Haleva, Esq., an attorney of record. Dr. Serra demonstrated an embodiment of the invention and Applicants' attorney and the Examiner discussed proposed claim amendments. The Examiner and Applicants' attorney discussed the cited references Fleury (2003/0043170) and Guedalia (5,963,213), and Applicants advised that they would file a supplemental amendment amending the independent claims to recite the automatic selection of a model zoom point on a three-dimensional object in the model.

## REMARKS

Claims 1-26, 30-37 and 40-42 were pending in the application. Independent claims 1, 30 and 32 have been amended to further clarify Applicants' invention. Dependent claims 3, 5-8 and 33 have also been amended. New independent claims 43 and 44 have been added. No new matter has been added. The following remarks, in conjunction with the above presented amendments, further respond to the Office Action. Claims 1, 30, 32 and 39 are the independent claims. Favorable reconsideration is requested.

### Rejection of Claims 1-35 and 37 Under 35 U.S.C. 103(a)

In the Office Action, claims 1-35 and 37 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5, 963, 213 to Guedalia ("Guedalia") in view of the United States Published Patent Application No. 2003/0043170 to Fluery ("Fleury"). This rejection is articulated relative to claim 1 at pages 3-4 of the Office Action. Similarly rejections are maintained against the remaining independent claims.

Claim 1 as amended recites a method for controlling the scaling of a 3D computer model comprising one or more 3D objects in a 3D display system. The claimed method includes activating a zoom mode in response to user input, obtaining a user's viewpoint, automatically selecting a model zoom point on a three-dimensional object in the model as a function of the user's viewpoint and the 3D positions of one or more objects in the model, setting a 3D scaling factor and scaling the model in response to user input, and automatically moving the model zoom point from its original position towards a system, application, or user defined optimum viewing point according to a defined algorithm.

As described in the specification, in exemplary embodiments of the present invention, once a user has signaled a zoom operation various methods can be used to have a system automatically identify his desired object and select a model zoom point on that object. It can be cumbersome for a user to always have to signal a visualization system which 3D object is desired to be zoomed, and what center of zoom, or model zoom point, should be used. Sophisticated users want a system to have sufficient intelligence to do these tasks for them. Thus, as recited in claim 1, as amended, the system can automatically determine what object a user is viewing by obtaining his or her viewpoint and automatically setting a center of zoom on the selected object. The object can be located as a function of the calculated viewpoint and neighboring objects to the intersection of the user's viewpoint with the model space.

Various examples of automatic model zoom point selection methods, are described, for example, in ¶¶ 63-77 of the published application (US Pub. No. 2004/0233222) , and the psuedocode presented in ¶¶ 77-79 of the published application. In partciular the pseudocode at ¶ 77 contains the following function:

```
bool ScalingControl::Update_Model_Zoom_Point ( )
{
// Search for a Model Zoom Point using four methods:
// Method 1 - select user-nearest point visible (if any along) z-axis.
// if none visible, try
// Method 2 - select user-nearest point visible along the line from user's
// viewpoint to the Center of All Visible Objects
// if none visible, try
// Method 3 - select user-nearest point visible along the line from user's
// viewpoint to the Center of Each Visible Object (sorted according to the
// centers' distance to the Optimum Viewing Point)
// if none visible, use
// Method 4 - Use the Center of the Object nearest to the Optimum Viewing Point if
(Clipping_Box_Is_Enabled ( ))
```

This function sets forth four exemplary methods by which a system can automatically select a Model Zoom Point. The exemplary embodiment reflected in this pseudocode utilizes the user's viewpoint s an input, and automatically selects a visible point (i) along the the z-axis, (ii) along a line from the viewpoint to the center of all visible objects, (iii) along lines from the viewpoint to the center of each visible object, or (iv) at the center of the object nearest to the optimum viewing point, as a Model Zoom Point. Thus, the methods automatically locate a visible point within the model to set as the Model Zoom Point based on a user's viewpoint (necessary to find the lines between said user's viewpoint and various objects or centers of objects) and the 3D positions of one or more objects in the model. Because the point is visible (and not in a region of empty space) the Model Zoom Point lies on an actual 3D object in the model.

Because the exemplary method takes

Additionally, in a zoom operation, where the center of scaling, or model zoom point, is ***not*** the optimum viewing point, as defined by the system, an application, or a user, a situation as depicted in Fig. 2B of the specification can occur. In such a situation the center of the zoomed object can undesirably translate within the display space as a result of the zoom operation being centered at point 201, whose (x,y,z) co-ordinates are not equal to (0,0,0), the system defined optimum viewing point in this example. *Specification* at ¶ 49. This motion of the model under examination can be disconcerting to a user, as some or most of the model under examination can move out of an optimum viewing area of the display screen. One conventional way to ameliorate this problem is to only allow zooming operations when the model zoom point is precisely at the optimum viewing point. However, this imposes counter-intuitive constraints on a user while examining a model. The claimed invention thus automatically moves the model zoom point to a defined optimum viewing point to provide the user with a convenient viewing of the now magnified portion of the model of interest.

Guedalia is directed to two-dimensional images. In particular, a method of displaying a cylindrical source image, such as a "cylindrical panorama," onto a flat plane. This involves mapping pixels form the curved source image to a view plane according to certain rules. Guedalia describes conventional 2D zoom operations in that context. It is not concerned with embodying a visualization system with intelligence to identify a desired object to be zoomed, or an appropriate model zoom point thereon.

Fleury describes navigating in a multi-scale 3D scene, such as a virtual oil well. It describes assigning reference shapes to 3D models. Fleury at ¶ 21. These shapes track the motion of 3D model objects. *Id.* Further, the Fleury system restricts the motion of the points

of interest ("POI") within the 3D models to be within the associated reference shape. Fleury addresses a problem unique to less than optimal 3D visualization systems. The user cannot accurately choose a model zoom point (or model "pivot point") in 3D so it uses a 2D approximation. (It is noted that claim 1 of the present application is directed to model zoom points being selected in 3D, and thus the problem sought to be solved by Fleury does not arise). When a user implements a translation, rotation or zoom, the POI is moved along the reference shape. Fleury also is not concerned with embodying a visualization system with the intelligence to automatically identify a desired object to be zoomed, or an appropriate model zoom point thereon.

Thus, neither Guedalia nor Fleury teach or suggest obtaining a user's viewpoint and automatically identifying a user's desired three-dimensional object and selecting a model zoom point on such three-dimensional object as a function of the user's viewpoint and the 3D configuration of the object, as is recited in independent claims 1, 30, 32, 43 and 44..

Thus, claims 1, 30, 32, 43 and 44 are urged as patentable over Guedalia and Fleury, whether alone or in combination.

For similar reasons, each of the remaining dependent claims are also urged as patentable over these references as well.

The Examiner has already allowed claim 39. Thus all claims are asserted as being in condition for allowance. If any issues remain, Applicants would request a telephonic conference with the Examiner prior to the ssuance of any further office actions so as to efficiently resolve any such issues.

No other fee is believed to be due in connection with the submission of these papers. However, the Commissioner is hereby authorized to charge any fee deficiency or credit any overpayment to Deposit Account No. 50-0540.

Dated: **December 12, 2007** Respectfully submitted,

/Aaron S. Haleva/

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